California Marine Life Protection Act Initiative
Master Plan Science Advisory Team
Executive Summary – SAT Central Coast MPA Proposal Evaluations
For Goals 1 and 4
September 14, 2006

The MLPA Master Plan Science Advisory Team (SAT) analyzed the relative merits of the six originally proposed central coast marine protected area (MPA) packages (0, 1, 2, 3, S, AC) in meeting the SAT guidelines and science-related goals (1, 2, 3, 4 and 6) of the Marine Life Protection Act (MLPA). Those analyses were discussed, refined, and approved by those members of the SAT present at the January 20, 2006 and March 2, 2006 SAT meetings in San Jose. Subsequent to those meetings, modifications were made by the BRTF to packages 2 and 3. A SAT sub-team analyzed the resulting packages 2R and 3R relative to goals 1 and 4; these analyses were approved by those members of the SAT present at the 1 May, 2006 meeting in San Jose. Subsequently, the DFG developed Package P, which was analyzed and summarized by the SAT sub-team on June 21, 2006. On August 15, 2006, the California Fish and Game Commission created and adopted a preferred alternative. This Executive Summary (September 14, 2006) reflects the SAT sub-team analyses for Packages 0, 1, 2R, 3R, P, and the Commission Preferred relative to Goals 1 and 4.

Table 1: Scientific Elements Used to Evaluate MLPA Science-Related Goals

MLPA goal	SAT evaluation of scientific elements
1. To protect the natural diversity and abundance of marine life, and the structure, function, and integrity of marine ecosystems.	Habitats and protection levels
2. To help sustain, conserve, and protect marine life populations, including those of economic value, and rebuild those that are depleted.	Size, spacing and protection levels
3. To improve recreational, educational, and study opportunities provided by marine ecosystems that are subjected to minimal human disturbance, and to manage these uses in a manner consistent with protecting biodiversity.	Habitat replication
4. To protect marine natural heritage, including protection of representative and unique marine life habitats in California.	Habitats and protection levels
5. To ensure that California's MPAs have clearly defined objectives, effective management measures and adequate enforcement and are based on sound scientific guidelines.	No SAT evaluation specific to Goal 5
6. To ensure that the states' MPAs are designed and managed, to the extent possible, as a network.	Size and spacing guidelines

Based on these new analyses, the SAT sub-team drew these conclusions:

SAT Guidelines and Area Protected by MPAs

Helping to sustain populations through the use of MPAs depends on population size, the spatial distribution of MPAs, the magnitude of fishing pressure outside the MPAs, extent of adult movement and the dispersal distance of larvae. To help sustain a variety of populations and, by extension communities and ecosystems, the SAT chose MPA size and spacing guidelines that were judged to be adequate. As such, the MLPA Master Plan Framework (MPF) guidelines of MPA size and spacing provide a method for evaluating the proposed MPA packages. With regard to helping to sustain populations, the SAT recommended that MPAs should extend from the shoreline to deep water (i.e., offshore boundary of state waters) and should be a minimum of 3-6 miles along the coast, and preferably 6-12 miles in length. These size guidelines were recommended to include the typical range of movements of many species living in state waters. The maximum spacing guideline of 30-60 miles was based on the dispersal distances of larvae of many species.

The size and spacing guidelines are not independent of one another. The SAT recommended that if proponents choose to propose smaller MPAs, then those MPAs should be spaced closer together (at the lower end of the proposed spacing guideline). Conversely, consistently larger MPAs could be situated at the larger end of the spacing guideline.

Because there are many possible combinations of size and spacing, the SAT provides the following guidance to the MLPA Blue Ribbon Task Force (BRTF) with respect to the amount of area needed to be protected to meet the MLPA goals:

- The minimum size guideline (3 miles long) combined with the minimum spacing guideline (30 miles apart) suggests that at a minimum, MPAs should cover at least 9% of each habitat in the study area (i.e., 3 mi/33 mi).
- The maximum of the preferred size guideline (12 miles) combined with the lower value of the maximum spacing guideline (30 miles) suggests that MPAs covering up to 29% of each habitat in the study area bound the preferred range of SAT guidelines (i.e., 12 mi/42 mi).

Using these benchmarks, the SAT sub-team examined which habitats were included at the 10%, 20% (i.e., midpoint), and 30% levels for each package.

General Comments on All Packages (without consideration of existing kelp harvest leases)

How packages are similar:

1. All packages have increased conservation benefits and have created substantially better ecological MPA networks relative to existing MPAs (Package 0).

How packages differ:

2. The packages differ substantially in the amount of area protected and the level of protection in each of the 10 habitat types that were evaluated. The ten habitats types that were evaluated included deep rock, shallow rock, deep sand, shallow sand, deep canyon, shallow canyon, estuary, kelp, rocky intertidal, and sandy beach.
3. With respect to the amount of area receiving any protection, regardless of levels, the packages are ordered in the following manner (least to most protection): Package 1 (15%), Package 3R (17%), Package P and the Commission Preferred (each 18%), and Package 2R (19% protection).
4. With respect to the amount of area receiving moderate-to-high-level protection (that is, SMR, SMCA-high, and SMCA-moderate), the packages are ordered as: Package 1 (14% protection), the Commission Preferred (16% protection), Package P and Package 3R (17%), and 2R (18%). However, there are large differences among packages when evaluated on a habitat-by-habitat basis. For example, for shallow rock and kelp habitats, Package 1 places about half as much area in moderate-to-high-level protection as does either Package 2R or 3R. Package P and the Commission Preferred protect 77% and 84% (respectively) of shallow rock and kelp habitats as that protected by Package 2R or 3R.
5. With respect to the amount of area receiving high-level protection (SMR & SMCA-high), the packages are ordered as: Package 1 (9% protection), Package P (13%), the Commission Preferred (14%), Package 3R (15%), and 2R (16%). However, when evaluated on a habitat-by-habitat basis, for shallow rock, shallow sand, and kelp habitats, Package 1 places about half as much area in high-level protection as do the Commission Preferred and Packages 2R and 3R. Likewise, whereas the Commission Preferred and Package P protect about twice the amount of shallow canyon habitat as do Packages 1, 2R, and 3R; the Commission Preferred and Package P protect only two-thirds the amount of estuary habitat as do the other three packages. Package 1 protects the greatest amount (24%) of deep canyon habitat relative to the other packages (16-19%).
6. Finally, when considering the amount of area receiving the highest level (SMR) protection, the packages are ordered (least to most) as: Package 1 (5%); Package P and the Commission Preferred (8%); Package 3R

(10%); and Package 2R (13%). When evaluated on a habitat-by-habitat basis, for five habitats (shallow rock, shallow sand, deep canyon, and kelp), Package 1 protects about half as much area in SMRs as do the other packages. The Commission Preferred and Package P protect about twice the amount of shallow canyon habitat as do the other three packages, whereas packages 2R and 3R protect twice the amount of deep sand as do the other three packages.

Specific Comments on All Packages (without consideration of existing kelp harvest leases)

Moderate to High Level of Protection across All Packages

7. All packages protect at least 10% of each of the 10 habitat types at the moderate-to-high protection levels across the study region, with the exception of shallow canyon habitat in Packages 1 and 3R (each protecting 5%).
8. All packages provide moderate-to-high level protection to at least 20% of five habitats: deep rock, deep sand, deep canyon, rocky intertidal, and estuarine habitats.
9. No package protects 30% or more of all habitats at the moderate-to-high levels. However, packages 2R and 3R each protect 5 habitat types at these protection levels, whereas packages 1, P, and the Commission Preferred each protect 2 habitat types.

High Level of Protection across All Packages (SMR or SMCA-High MPAs)

10. All packages provide high-level protection for at least 20% of rocky intertidal habitat.
11. All packages provide high-level protection for at least 30% of estuarine habitat, except for the Commission Preferred and Package P, which provide high-level protection to 23% of estuarine habitat.

Highest Level of Protection across All Packages (SMR)

12. Only package 2R provides the highest level of protection to at least 10% of all habitat types, excluding shallow canyon habitat.
13. All packages provide the highest level of protection to at least 10% of five habitats: shallow rock, sandy beach, kelp, rocky intertidal, and estuaries.
14. All packages provide the highest level of protection to at least 20% of rocky intertidal and estuarine habitats.
15. In general, all the packages provide the least amount of highest level of protection to deep rock, deep sand, deep canyon, shallow canyon, and shallow sand habitats.

Other Comments to Specific Packages

Package 1

- o Provides moderate-to-high level protection for at least 20% of five habitats.
- o Provides high-level protection for at least 20% of four habitats: rocky intertidal, estuaries, deep canyon, and deep sand.
- o Provides high-level protection for at least 30% of only one habitat: estuaries.
- o SMRs include less than 1% of available deep rock habitat, and less than 5% of available deep sand, shallow sand, deep canyon, and shallow canyon habitats.

Package 2R

- o Provides moderate-to-high level protection for at least 20% of eight habitats.
- o Provides high-level protection for at least 20% of six habitats: rocky intertidal, estuaries, deep rock, shallow rock, kelp, and sandy beach.
- o Provides high-level protection for close to 30% (or greater) of four habitats: shallow rock, rocky intertidal, estuaries, and kelp.
- o Provides high-level protection to less than 5% of available shallow canyon habitat.
- o Provides highest-level of protection to 10% of deep rock habitat, in sharp contrast to all other packages (0-1%).

Package 3R

- o Provides moderate-to-high level protection for at least 20% of eight habitats.
- o Provides high-level protection for at least 20% of seven habitats: shallow rock, deep rock, deep canyon, rocky intertidal, kelp, sandy beach, and estuaries.
- o Provides high-level protection for at least 30% of four habitats: shallow rock, kelp, rocky intertidal, and estuaries.
- o SMRs are proposed for less than 1% of available deep rock habitat, and less than 5% of available shallow canyon habitat.

Package P

- o Provides moderate-to-high level protection for at least 20% of eight habitats.
- o Provides high-level protection for at least 20% of five habitats: rocky intertidal, estuaries, shallow rock, deep rock, and kelp.
- o SMRs protect 0.1% of available deep rock habitat, and 8% or less of available deep sand, shallow sand, deep canyon, and shallow canyon habitat

Commission Preferred

- Provides moderate-to-high level protection for at least 20% of eight habitats.
- Provides high-level protection for at least 20% of six habitats: deep rock, estuary, intertidal, kelp, sandy beach, shallow rock.
- SMRs protect less than 1% of available deep rock habitat, and 8% or less of available shallow sand, shallow canyon, deep canyon, and deep sand habitat.